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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/753,523	01/08/2004	Eric Lawrence Barsness	ROC920030328US1	9847
30206 7590 12/20/2006 IBM CORPORATION ROCHESTER IP LAW DEPT. 917 3605 HIGHWAY 52 NORTH ROCHESTER, MN 55901-7829			EXAMINER PYO, MONICA M	
			ART UNIT 2161	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE 3 MONTHS		MAIL DATE 12/20/2006	DELIVERY MODE PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/753,523	<b>Applicant(s)</b> BARSNESS ET AL.	
	<b>Examiner</b> Monica M. Pyo	<b>Art Unit</b> 2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 and 17-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 17-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 3-16 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

***DETAILED ACTION***

1. This communication is responsive to 10/11/2006.
2. Claims 1-15 and 17-19 are currently pending in this application. Claims 1 and 17 are independent claims. In the Amendment filed 10/11/2006, claims 1-4, 7 and 17-19 are amended.

***Election/Restrictions***

3. Newly amended claims 3-15 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

- I. Claims 1-2 and 17-19, drawn to a method and an apparatus for indexing a database table, identifying a plurality of substrings and creating a corresponding index, classified in class 707, subclass 7.
- II. Claims 3-15, drawn to a method and an apparatus for running a query on a database table, identifying a set of values that satisfy the query based on the plurality of corresponding indices, classified in class 707, subclass 3.

Since applicant has received an action on the merits for the originally presented invention (Group I), this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 3-15 (Group II) are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

**FROM MPEP: 821.03 [R-3] Claims for Different Invention Added After an Office Action**

Claims added by amendment following action by the examiner, MPEP § 818.01, § 818.02(a), to an invention other than previously claimed, should be treated as indicated by 37 CFR 1.145.

*37 CFR 1.145. Subsequent presentation of claims for different invention.*

If, after an office action on an application, the applicant presents claims directed to an invention distinct from and independent of the invention previously claimed, the applicant will be required to restrict the claims to the invention previously claimed if the amendment is entered, subject to reconsideration and review as provided in § 1.143 and 1.144.

***Claim Objections***

4. The claim amendment received on 10/11/2006. The changes are accepted and therefore, the claim objections made in a prior Office Action are withdrawn.

***Claim Rejections - 35 USC § 101***

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 19 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The language of the claim raises a question as to whether the claim is directed merely to an environment or machine which would result in practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101.

Regarding claim 19, this claim recites “A program product...” and “program code configured upon execution ...”. This limitation appears to be non-statutory because it lacks the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 U.S.C. 101. They are clearly not a series of steps of acts to be a process nor are they a combination of chemical compound to be a composition of matter. As such, they fail to fall within a statutory category.

Claim 19 also recites “a signal bearing medium bearing the program code”. The “signal bearing medium” as used herein can take the form of carrier waves. Applicants’ Specification, pg. 11, lns. 8-11, discloses the term “signal bearing medium” as used herein, refers to any type of “recordable type media such as volatile and non-volatile memory devices...., among others, and transmission type of media such as digital and analog transmission links.” Transmission media can also take the form of carrier waves; i.e. electromagnetic waves that can be modulated, as in frequency, amplitude or phase, to transmit information signals.

Therefore, claim 19 does not fall within a statutory category. Claim 19 is, at best, functional descriptive material (i.e. software) *per se*. Also, a claimed signal is clearly not a “process” under § 101 because it is not a series of steps. Applicants are suggested to amend the phrase “a signal bearing medium bearing” to “computer readable storage medium stores” to include only volatile and non-volatile media in order to overcome the above 101 rejection.

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1 and 2 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, this claims recites the phrase “index over the column” in line 5. It is unclear what the phrase “index over the column” means. Does it means the index is assigned to the column? Does it means the index points to the column? Clarification is required.

Claim 2 is also rejected by virtue of its dependency to claim 1.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

9. Claim 1 is rejected under 35 U.S.C. 102(a) as being anticipated by U.S. Patent No. 6,556,990 issued to Lane (hereinafter).

Regarding Claim 1, as far as the claim is understood, Lane discloses a method for indexing a database table, said table comprising a column of values, the method comprising the steps of:

**A). identifying a plurality of substrings, each substring comprising one or more characters, as the sub-string “CDE” is used to find the corresponding sub-string (Lane: col. 5, lns. 23-33); and**

**B). for each substring creating a corresponding index over the column, wherein each corresponding index includes a respective entry for each value in the column, the respective entry for a particular value being indicative of whether the corresponding substring occurs in that particular value, as the sub-string within the relational database is used to perform a lookup in sub-string index (Lane: col. 5, lns. 28-34, 38-41 and 47-66).**

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2161

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 2, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lane as applied to claim 1 above, in view of U.S. Patent No. 6,785,677 issued to Fritchman (hereafter Fritchman).

Regarding Claim 2, as far as the claim is understood, Lane discloses the method wherein the respective entry for the particular value is indicative of the corresponding substring in that particular value (Lane; col. 5, lns. 61-col. 6, lns. 13)

Lane does not explicitly disclose: a number of occurrences of.

However, Fritchman discloses: a number of occurrences of (Fritchman: col. 7, lns. 30-35).

It would have been obvious for a person with ordinary skill in the art to apply the Fritchman's teaching of occurrences of the multi-character into the sub-string searching system of Lane. The skilled artisan would have been motivated to incorporate the feature of matching characters occurring in the pattern within the string of Fritchman in the sub-string searching system of Lane to utilize the feature of determining whether a text string is a member of a set of strings (Fritchman: col. 2, lns. 37-49).

Regarding Claims 17 and 19, Lane discloses an apparatus for executing a query on a database table, said table comprising values, the apparatus comprising:

A). **at least one processor**, as a processor (Lane: col. 4, lns. 1-6);

**B). a memory coupled with the at least one processor, as a storage device in a computer system (Lane: col. 3, lns. 60-col. 4, lns. 6);**

**C). a plurality of indices stored within said memory each index corresponds to one of a plurality of substrings and each index includes a respective entry for each value, the respective entry indicative of whether the corresponding substring occurs within the value, as the sub-string within the relational database is used to perform a lookup in sub-string index (Lane: col. 3, lns. 52-67; col. 5, lns. 28-34, 38-41 and 47-66); and**

**D). a program code residing in the memory and executed by the at least one processor, the program code configured to scan the values of the table based, as the computer readable storage medium stores a program code and the look-up process (Lane: col. 3, lns. 23-35; col. 5, lns. 23-33)**

Lane does explicitly disclose:

**D). a combination of the plurality of indices**

However, Fritchman discloses:

**D). a combination of the plurality of indices, as a pattern string (Fritchman: col. 5, lns. 46-48).**

It would have been obvious for a person with ordinary skill in the art to apply the Fritchman's teaching of occurrences of the multi-character into the sub-string searching system of Lane. The skilled artisan would have been motivated to incorporate the feature of matching characters occurring in the pattern within the string of Fritchman in the sub-string searching system of Lane to utilize the feature of determining whether a text string is a member of a set of strings (Fritchman: col. 2, lns. 37-49).



12. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lane in view of Fritchman as applied to claim 17 above, and further in view of U.S. Patent No. 5,845,276 issued to Emerson et al. (hereafter Emerson).

Regarding Claim 18, Lane and Fritchman do not explicitly disclose the apparatus wherein the program code is further configured to:

build a bitmap based on the plurality of indices, the bitmap having an element for each value of the column that is set based on the respective entries for that value from the plurality of indices.

However, Emerson discloses:

A bitmap creation with an element for a value from a table, which correspond to build a bitmap based on the plurality of indices, the bitmap having an element for each value of the column that is set based on the respective entries for that value from the plurality of indices (col. 11, lns. 60-67; col. 12, lns. 1; col. 19, lns. 8-14).

It would have been obvious for a person with ordinary skill in the art to apply the bitmap generating method of Emerson into the Fritchman's teaching of occurrences of the multi-character, and into the sub-string searching system of Lane. The skilled artisan would have been motivated to incorporate the feature of the Emerson's teaching of the feature to generate the bitmap in the matching characters occurring in the pattern within the string of Fritchman, and in the sub-string searching system of Lane to enhance the relational database searching method (Emerson: col. 1, lns. 18-28).

*Response to Arguments*

13. Applicant's arguments with respect to claims 1-2 and 17-19 have been considered but are moot in view of the new ground(s) of rejection.

*Conclusion*

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica M. Pyo whose telephone number is 571-272-8192. The examiner can normally be reached on Mon-Fri 6:30 - 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on 571-272-4146. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Monica M Pyo  
Examiner  
Art Unit 2161

mp  
12/11/06



Leslie Wong, Primary Examiner

LW